REMARKS

This application has been reviewed in light of the final Office Action dated March 17, 2009. Claims 1-20 are pending in this application, of which Claims 1, 15, and 18 are in independent form. Claims 1-14 have been amended to define more clearly what Applicants regard as their invention. Claims 15-20 have been added to provide Applicants with a more complete scope of protection. Favorable reconsideration and allowance are respectfully requested.

A substitute specification is submitted herewith, along with a marked-up version showing the changes made thereto. Aside from minor formatting changes, the specification was amended to replace the term "suprastructure" with "superstructure" throughout, which Applicants believe to be the more common term of art. No new matter has been added.

The Office Action rejected 1-5, 8, 9, 13 and 14 under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent No. 5,273,429 to Rekow in view of U.S. Patent No. 6,398,554 to Perot et al. Claims 6, 7, 11 and 12 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Rekow in view of Perot et al. and further in view of U.S. Patent No. 5,359,511 to Schroeder. Claim 10 was rejected under 35 U.S.C. § 103(a) as being unpatentable over Rekow in view of Perot et al. and further in view of U.S. Patent No. 6,968,247 to Rathke. These rejections are respectfully traversed.

As recited in independent claim 1, the present invention relates to a method of automatically fabricating a dental superstructure to be attached to an implant. The method involves the steps of recording a real clinical situation or a shaped clinical situation of the implant as digital data, analyzing this situation and determining an

implant axis and computing an optimum shape of the superstructure based at least in part on the determined implant axis. Then, the computed optimum shape is automatically separated into first digital data and second digital data, and the first and second elements are fabricated from one or more blanks on the basis of the first and second digital data with the aid of machining equipment.

Multi-element superstructures for attachment to a dental implant are known in the art. One of the elements of such superstructures is the so-called abutment, which has one side oriented towards the jaw and another side oriented towards the oral cavity. The side of the abutment oriented towards the jaw joins with the end of the implant, while the side of the abutment oriented towards the oral cavity joins with another element of the superstructure, such as, for example, a crown.

Due to the nature of a patient's jaw, however, the axis of the implant and the proper axis of the insertion of the crown (the latter of which is roughly perpendicular to the occlusal surface of the teeth) seldom coincide, and thus an important function of the abutment is to compensate for the angular difference between those two axes. In conventional methods and systems, however, standard abutments with fixed tilt angles are used, which can compensate only roughly for that angular difference. Such standard abutments result in a sub-optimally oriented superstructure.

The present invention overcomes this drawback by recording a real clinical situation or a shaped clinical situation of the implant as digital data, analyzing the recorded situation and determining an implant axis and computing an optimal shape of the dental superstructure based at least in part on the determined implant axis. By determining an implant axis and computing an optimal shape in this manner, the present

invention provides a superstructure that is more properly oriented in the occlusal direction.

Rekow relates to a method and apparatus for modeling a dental prosthesis. However, it does not relate to dental implant technology as the Office Action suggests. Rather, it relates to CAD/CAM techniques for creating dental restorations that are fitted on a preparation site. See, e.g., col. 1:14-18 ("The dentist prepares a tooth, grinding it into the required shape to properly accept a restoration (such as a crown, inlay or bridge)"). There is no implant in Rekow, no superstructure that attaches to an implant and no need to address the type of problem solved by the present invention, namely the problem of compensating for the angular difference between the two axes.

The Office Action contends that many of the salient elements of the present claims are found in the various steps of Fig. 8 of Rekow. But, Rekow Fig. 8 is simply a generalized flow diagram for modeling a crown that will be affixed to a prepared site, and does not teach or suggest anything about designing or fabrication a dental superstructure to be attached to an implant. Thus, for example, and without limitation:

- Step 40 of Rekow Fig. 8 simply teaches selecting the number of the tooth to be restored, based on the standard assignment of numbers to teeth (as shown in Fig. 3). It does not teach or suggest recording a real clinical situation or a shaped situation of a dental implant, as is recited in present claim 1.

- Step 42 of Rekow Fig. 8 simply teaches retrieving the analysis algorithm for the selected tooth. It does not teach or suggest analyzing a recorded situation or determining an implant axis, as is recited in present claim 1.

- Step 44 of Rekow Fig. 8 simply teaches fetching the data which was taken from measurements in the patient's mouth. It does not teach or

suggest computing an optimum shape of a dental superstructure based on a determined implant axis, as is recited in present claim 1.

Because Rekow is missing these and other salient claim elements, Applicants respectfully submit that it cannot anticipate or render obvious claim 1.

The Office Action cites Perot as teaching the recording of a first element and a second element. Like Rekow, Perot relates to a process for producing a restoration that sits on a preparation site, not a process for designing or fabricating a superstructure that attaches to an implant. The Office Action does not contend that Perot teaches or suggests the claim elements discussed above, and plainly it does not. Accordingly, Applicants respectfully submit that Perot cannot correct the deficiencies of Rekow.

As a result, independent claim1 is patentable for at least the reasons discussed above, and allowance is respectfully requested.

Independent Claims 15 and 18 recite features that are similar in many relevant respects to one or more of the features of Claim 1 emphasized above, and also are believed to be patentable over the above references for the same corresponding reasons give above with respect to those corresponding features.

The other claims in this application depend from one or another or the independent claims discussed above, and, therefore, are submitted to be patentable for at least the same reasons. Since each dependent claim is also deemed to define an additional aspect of the invention, however, individual consideration or reconsideration, as the case may be, of the patentability of each claim on its own merits is respectfully requested.

This Amendment After Final Action is believed to place this application in condition for allowance and, therefore, its entry is believed proper under 37 C.F.R.

§ 1.116. Accordingly, entry of this Amendment After Final Action, as an earnest effort to advance prosecution is respectfully requested. Should the Examiner believe that issues remain outstanding, it is respectfully requested that the Examiner contact Applicants' undersigned attorney in an effort to resolve such issues and advance the case to issue.

CONCLUSION

In view of the foregoing amendments and remarks, Applicants respectfully request favorable reconsideration and early passage to issue of the present application.

Applicants' undersigned attorney may be reached in our New York Office by telephone at (212) 218-2100. All correspondence should continue to be directed to our address listed below.

Respectfully submitted,

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